® SIDE-POWER

SX80/185T & SX100/185T External sternthruster assembly

Keep this manual onboard !

Installation and user manual

Intelligent POWER CONTROL

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CE

Made in Norway

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DECLARATION OF CONFORMITY

CE

We, Sleipner Motor AS
P.O. Box 519
N-1612 Fredrikstad, Norway

declare that this product with accompanying standard remote control systems complies with the essential health and safety requirements according to the Directive 89/336/EEC of 23 May 1989 amended by 92/31/EEC and 93/68/EEC.

Technical specifications

Motor: Custom made reversible DC-motor, 12 or 24 Volt

Motor output: SX80: 4,4kW SX100: 6kW

Gearhouse: Seawater resistant bronze. Ballbearing at propellershaft; combination of ballbearing and slide bearing at driveshaft.

Motor bracket: Seawaterresistant aluminium.

Ignition protection: Conforms to ISO 8846

Propeller: 5 blade skew "Q"-propeller , fibreglass reinforced composite.

Batteries: Minimum recommended battery capacity (cold crank capacity by DIN standard)
SX 80/185T 12V : 550 CCA DIN/1045 CCA SAE
SX 80/185T 24V : 300 CCA DIN/570 CCA SAE
SX 100/185T 12V : 750 CCA DIN/1425 CCA SAE
SX 100/185T 24V : 400 CCA DIN/760 CCA SAE

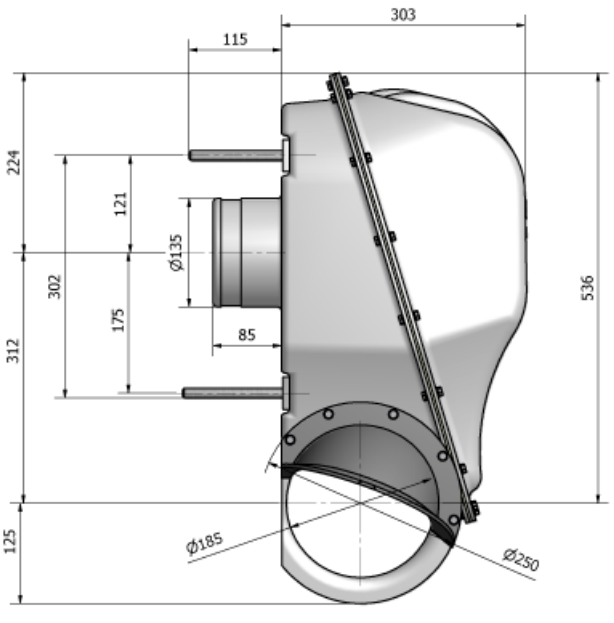
Max. use: *S2 = 3 min. or appr. 7-10% within a limited time frame. All electromotors are protected against overheating.*

Safety: Electronic time-lapse device protects against sudden change of drive direction. Electric thermal cut-off switch in electromotor protects against over heating (auto reset when electro motor cools down).

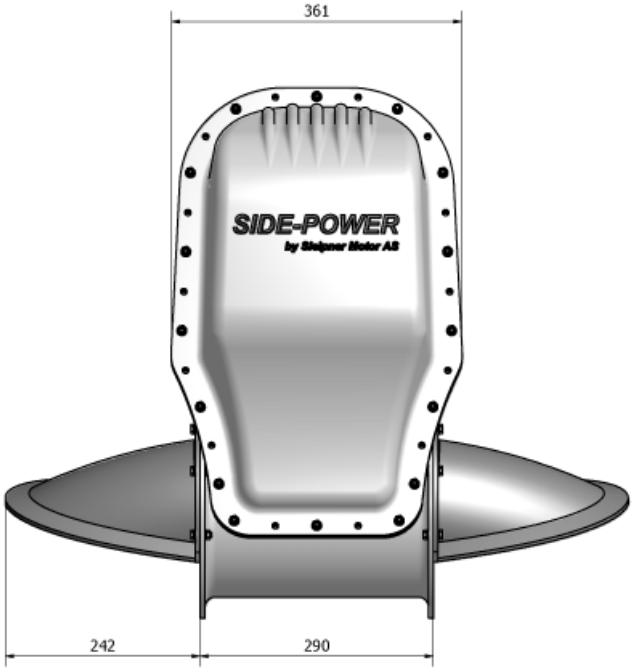
Flexible coupling between electro-motor and driveshaft protects electromotor and gearsystem if propeller gets jammed.

If original Sidepower panel is used, the panel shuts off automatically 6 minutes after last use.

Integrated microprocessor monitors solenoids, reducing wear and risk of solenoid lock-in. Auto-stop of thruster in case of accidental solenoid lock-in or if run signal is continous for more than 3 minutes.



Max. stern thickness: 100mm (80mm recommended)



Planning and important precautions

Prior to installation, it is important that the installer reads this guide to ensure necessary acquaintance with this product.

- The external sternthruster assembly must be handled carefully. Do not lift it by the cable connections.
- Beware to keep installation within adviced measurements.
- We advice to paint the gearhouse and propellers with antifouling. PS! Do not paint the zinc anodes, sealings or propellershafts.
- Do not finish the inside of the tunnel with a layer of gelcoat / topcoat or similiar. It is only room for a thin layer of primer and two layers of anti-fouling between the tunnel and the props.
- With the boat on land, only run the thruster for a fraction of a second, as without resistance it will accelerate very fast to a damaging rpm. Also, while the thruster is in air, make sure that the propellers have come to a complete stop before performing a direction change of the thruster, as it does cause damage to the thruster.
- This manual is intended to support educated / experienced staff and is therefore not sufficient in all details for the correct installation.
- The external sternthruster assembly has been tested to be fully ignition protected so that it can be installed in an area with the possibility of explosive gases in accordance to ISO 8846.
- Do not install the thruster in a position where you need to cut a stiffener/stringer/support for the hull integrity without checking with the boatbuilder that this can be safely done.
- When installed in boats approved or classified according to international or special national rules, the installer is responsible for following the demands in accordance with these regulations / classification rules. The instructions in this guide can not be guaranteed to comply with all different regulations / classification rules.

NB ! Faulty installation of the tunnel, thruster or panel will render all warranty given by Sleipner Motor AS void.

Stern thruster installation considerations

To achieve maximum effect, reliability and durability from your Sidepower stern thruster, a correct installation is very important.

Please follow the instructions carefully, and make sure that all checkpoints are carefully controlled.

Additional considerations for positioning of the stern thruster

- Make sure that the external sternthruster assembly does not disturb the waterflow under the hull
- Ensure that when installed the thruster does not foul exisiting equipment inside the boat like motor bedding etc.
- Make sure that the water flow from the thruster are not intereferred to much by sterndrives, trimtabs etc. as this will reduce the thrust considerably. With sterndrives , we recommend the use of our additional cowls.

IMPORTANT!

Do not remove the label stating serial number from the cables!

This serial number is required to get the

correct spare and service parts!

Fig. 1

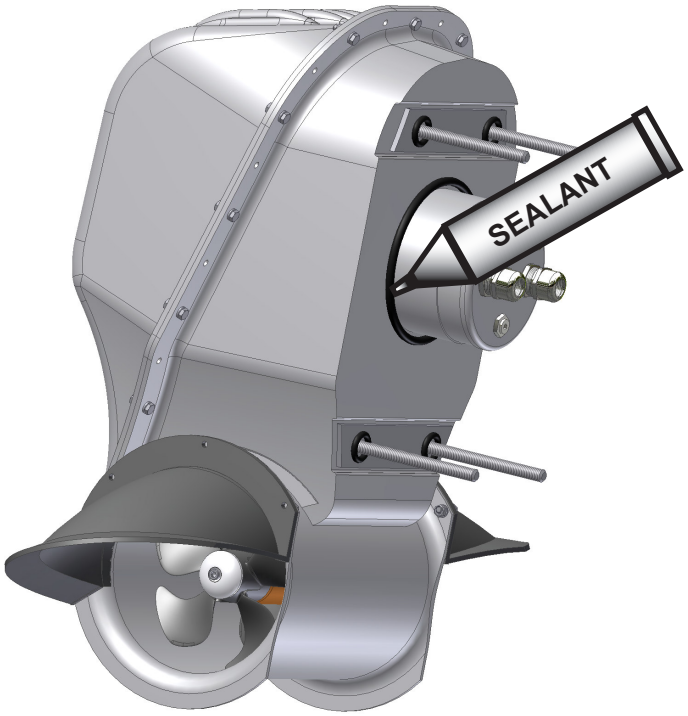
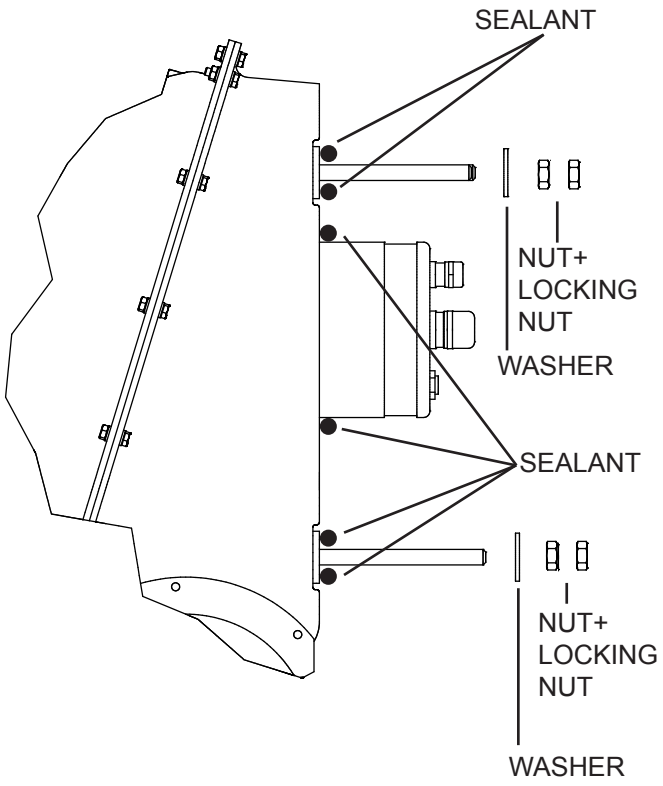


Fig. 2



Bolt on installation of the sternthruster assembly

1. Make sure that there are enough space both inside and outside the transom of the boat.

   NOTE:
   Make sure no part of the thruster is lower than the transom or protrudes outside the transom on either side - the lowest part of the thruster must be minimum 19mm over the bottom of the transom. Please take note of both A and B minimum measurements on the dimension drawing, page 5. A is most significant if the hull bottom angle is more than 24 degrees, B is most significant if the hull bottom angle is less than 24 degrees.

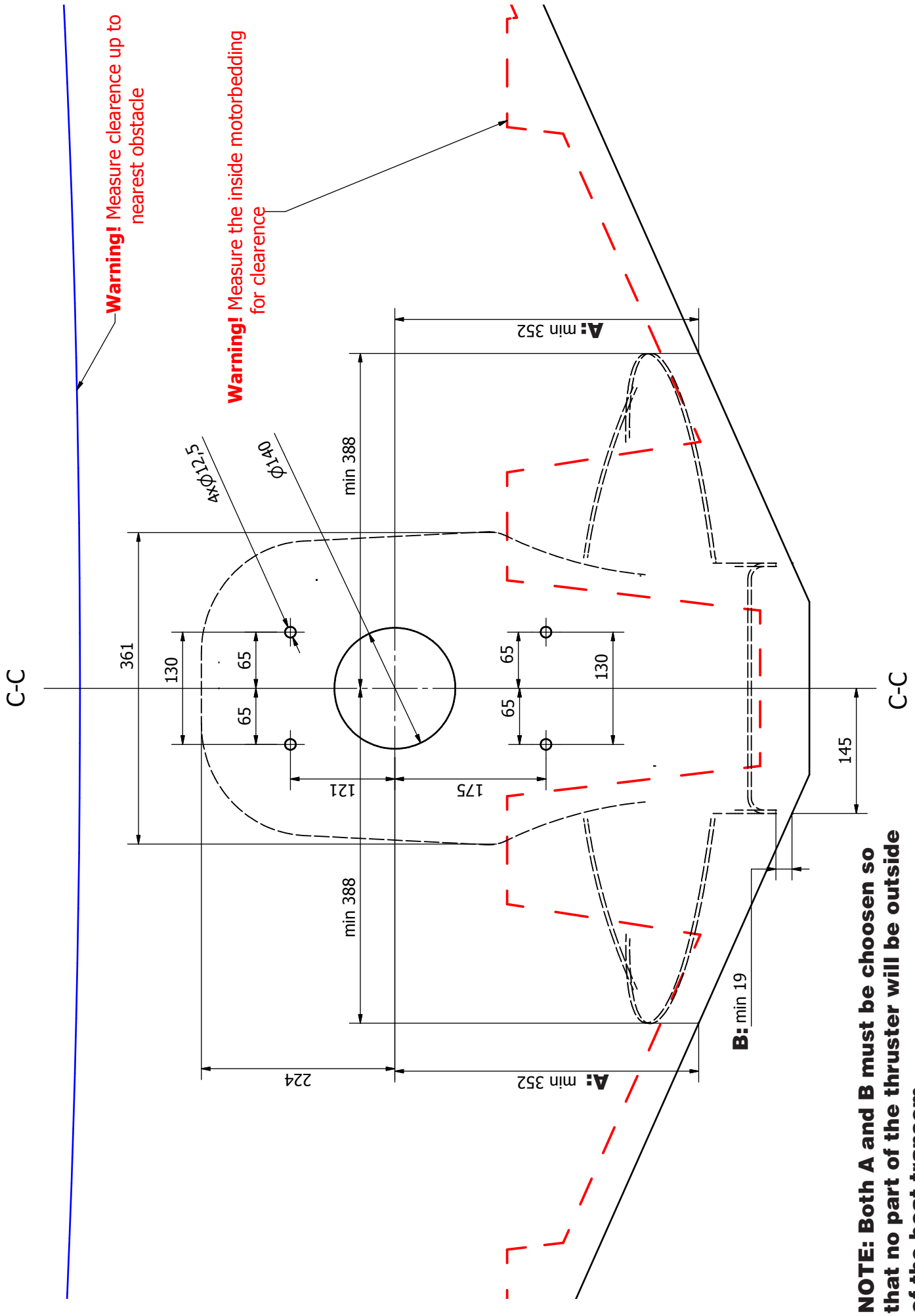
   Refer to drawing on page 5 and attached drilling template.

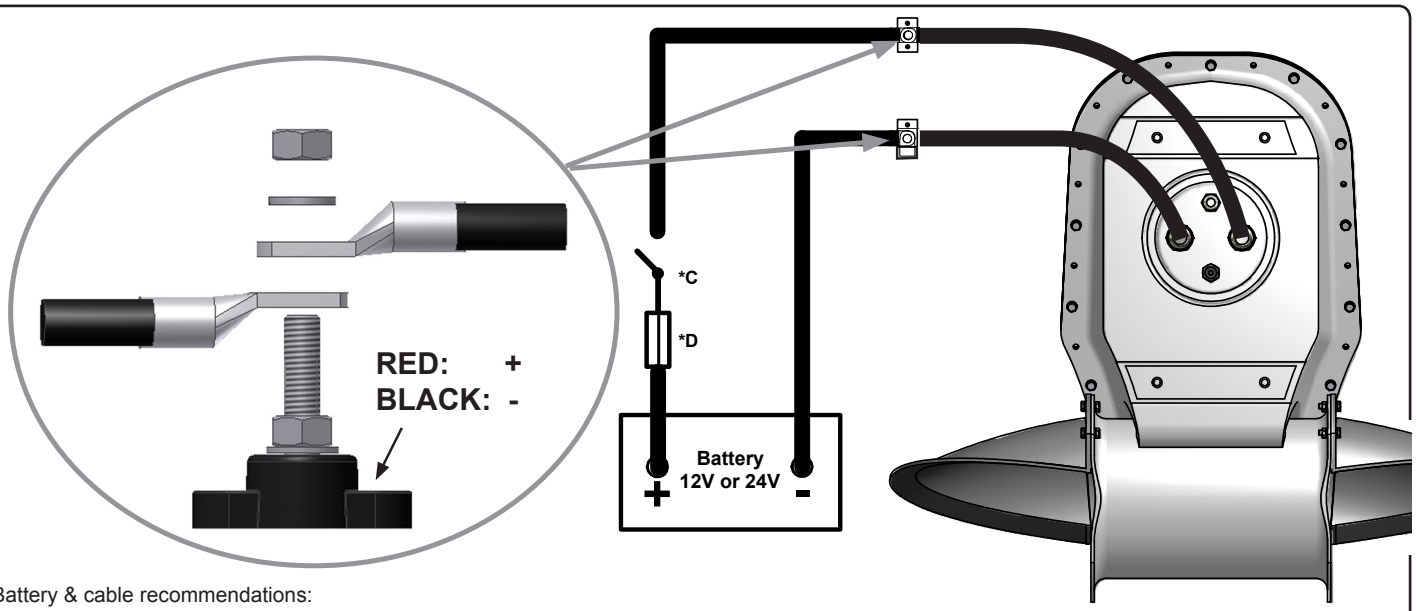
2. Once the place for the installation has been decided, use the drilling template and drill the holes.

3. It is important that the thruster assembly sits flush on the transom. If this is not so, then the area on the transom will have to be flattened to ensure a snug fit.
   PS ! Take care with grinders as it is very easy to remove to much in fibreglass

4. When fitting the thruster assembly, ensure that there is ample sealant (Sikaflex or similar) around the center tube with cable connectors and around the bolts to make a water tight fitting (Fig. 1/2).
   Bolts diameter: ø 12mm stainless steel

If a bow thruster is also installed, we strongly advice to use separate battery banks for the two thrusters to avoid extreme voltage drop if both thrusters are to be used at the same time. Refer to the thruster manuals for adviced battery capacity and cable sizes for each thruster.
Also ensure that you do not have direct connections of both + and - if you have built together controls for both thrusters to avoid current leakage between separate battery banks.
If you are installing the standard Sidepower dual joystick panel this is already secured.


Warning! Measure clearence up to nearest obstacle
Warning! Measure the inside motorbedding for clearence
A: min 352
4xϕ12,5
ϕ140
min 388
361
130
65
65
65
65
130
121
175
145
224
A: min 352
B: min 19
C-C
C-C
NOTE: Both A and B must be choosen so that no part of the thruster will be outside of the boat transom



Battery & cable recommendations:

Model	Voltage	Nominal current draw	Min. battery CCA		>7m total + & -		7-14m total + & -		15-21m total + & -		22-28m total + & -		28-35m total + & -		36-45m total + & -	
					Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.
SX80/185T	12 V	530 A	DIN: 550 SAE:1045	mm^2 AWG	60 2/0	70 2/0	95 3/0	2x 70 2x 2/0	2x 70 2x 2/0	2x 95 2x 2/0	2x 95 2x 3/0	*270**	2x 120 2x 4/0	*340**	NA	NA
	24 V	260 A	DIN: 300 SAE: 570	mm^2 AWG	25 1	35 1	35 1	50 1/0	60 2/0	70 2/0	70 2/0	95 3/0	95 3/0	120 4/0	120 4/0	2x 95 2x 3/0
SX100/185T	12 V	740 A	DIN: 750 SAE: 1425	mm^2 AWG	95 3/0	95 3/0	2x 70 2x 2/0	2x 95 2x 3/0	2x 95 2x 3/0	*280**	*250**	*375**	NA	NA	NA	NA
	24 V	340 A	DIN: 400 SAE: 760	mm^2 AWG	35 1	50 1/0	50 1/0	70 2/0	60 2/0	95 3/0	95 3/0	120 4/0	120 4/0	2x 95 2x 3/0	2x95 2x 3/0	2x 120 2x 4/0

Minimum and recommended cable dimensions can be identical due to safety margins and cable heat considerations for short cable lenghts.

* Minimum or recommended cable cross section in mm^2

Electrical installation

- Explanation of electrical table
  - All cable lengths are the total of + and - (to and from).
  - Battery size is stated as minimum cold crank capacity, not Ah.
  - Use slow fuse rated to hold stated Amp-Draw for min. 5 minutes.

  * Cable size and main battery size when an extra bow battery with minimum the CCA mentioned as A is installed.

- It is important that you use a good cable size and batteries with a high cranking capacity to feed the thruster, because it is the actual voltage at the motor while running the thruster that decides the output rpm of the motor and thereby the actual thrust. Please see the list below for advised min. sizes of cables and batteries. You can of course use larger cables for even better results.

- A main switch (*C) that can take the load without noticable voltage drop must be installed in the main positive lead so the power for the thruster can be turned off independently of the rest of the system when not on board or in emergencies. This should be placed in an easily accessible place and the boats instructions should include information that this should be turned off like the other main switches of the boat.

- We also advice to install a fuse (*D) in the positive lead for protection agains short circuiting of the main cables. This fuse should be of a adequate quality which normally means that it is physically large as these have less voltage drop than the simple / small ones. It should be of the slow type and sized to take the amperage draw for atleast 5 minutes.

- Remember to use ignition protected fuses and switches if fitted in areas that require this feature.

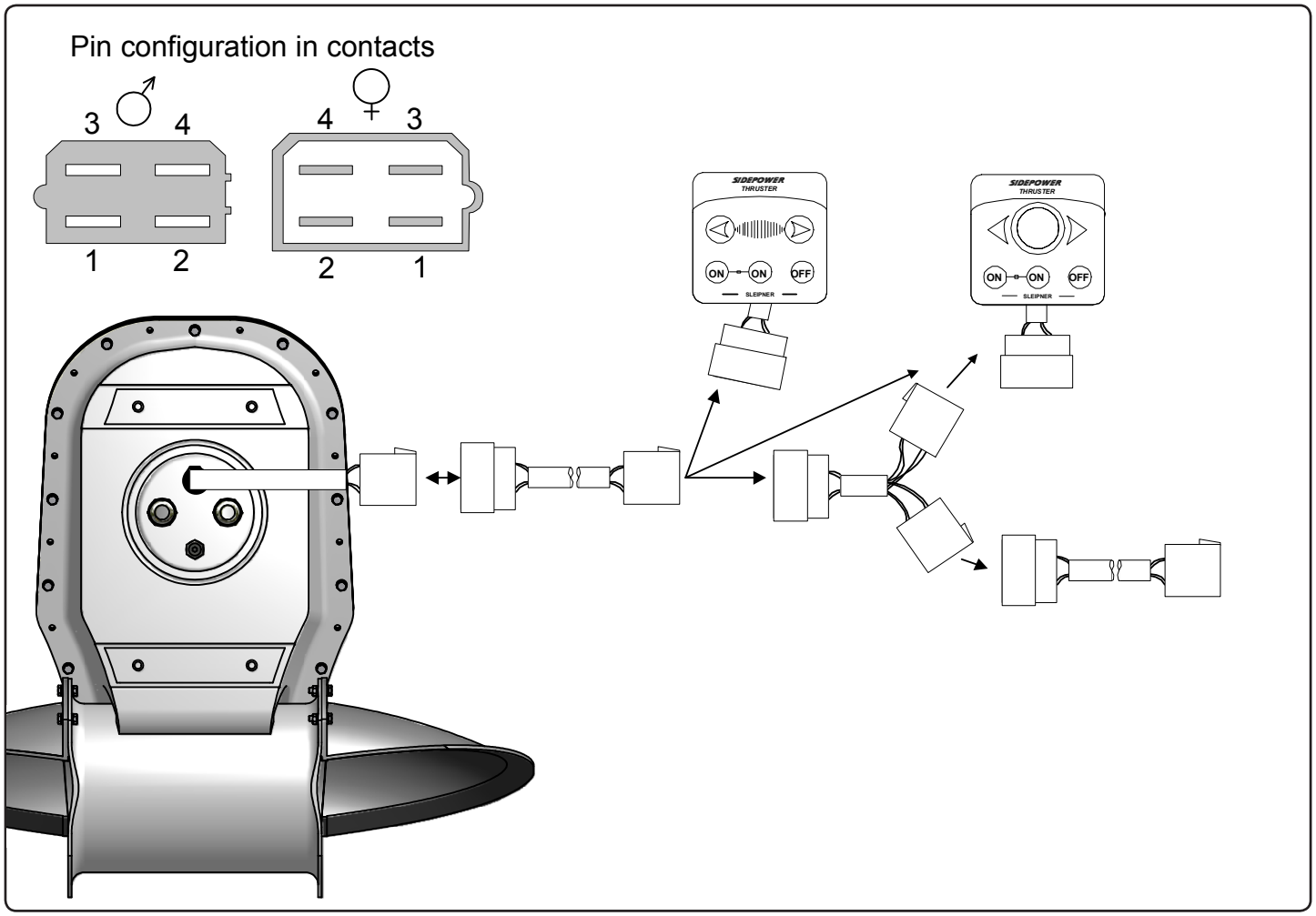
- A circuit breaker can be used instead of the fuse and main power switch as long as the functionality is the same.

- The cable ends must be fitted with terminals and these must be well isolated against contact with anything but the proper connection point.

- If the main switch and fuse are installed in the same gas area they also have to be ignition protected.

- The negative / minus cable connects to the (-) terminal. Bolt M10. Tighten with 25 Nm / 18,43 lb/ft.

- The positive / plus cable connects to the "+" terminal. Bolt M10. Tighten with 25 Nm / 18,43 lb/ft.



Control panel and control-leads

- You can install as many panels as you wish by using optional Y-connectors. If two or more panels are operated at the same time in opposite directions, the electronic controlbox will stop the thruster until it only receives a signal to go in one direction.
- When using original Sidepower equipment it is all "plug & go".
- If the drive direction of the thruster is the opposite of what ex-pected, the blue and grey wire must be changed on each panel.
- The mechanical installation of the panel is described in the manual following the panel.
- The IP thruster is gas proof based on the control panel lead ending outside of the area that requires ignition protection. The prefitted control lead must be fitted in the boat so there is no risk of damage to the insulation, causing explosive gas penetration.
- The thruster control should be placed in a position were it is easy to use, and it is very common to use the thruster at the same time as your gear / throttle lever so it is normally a user friendly solution to be able to access these with one hand for each control.

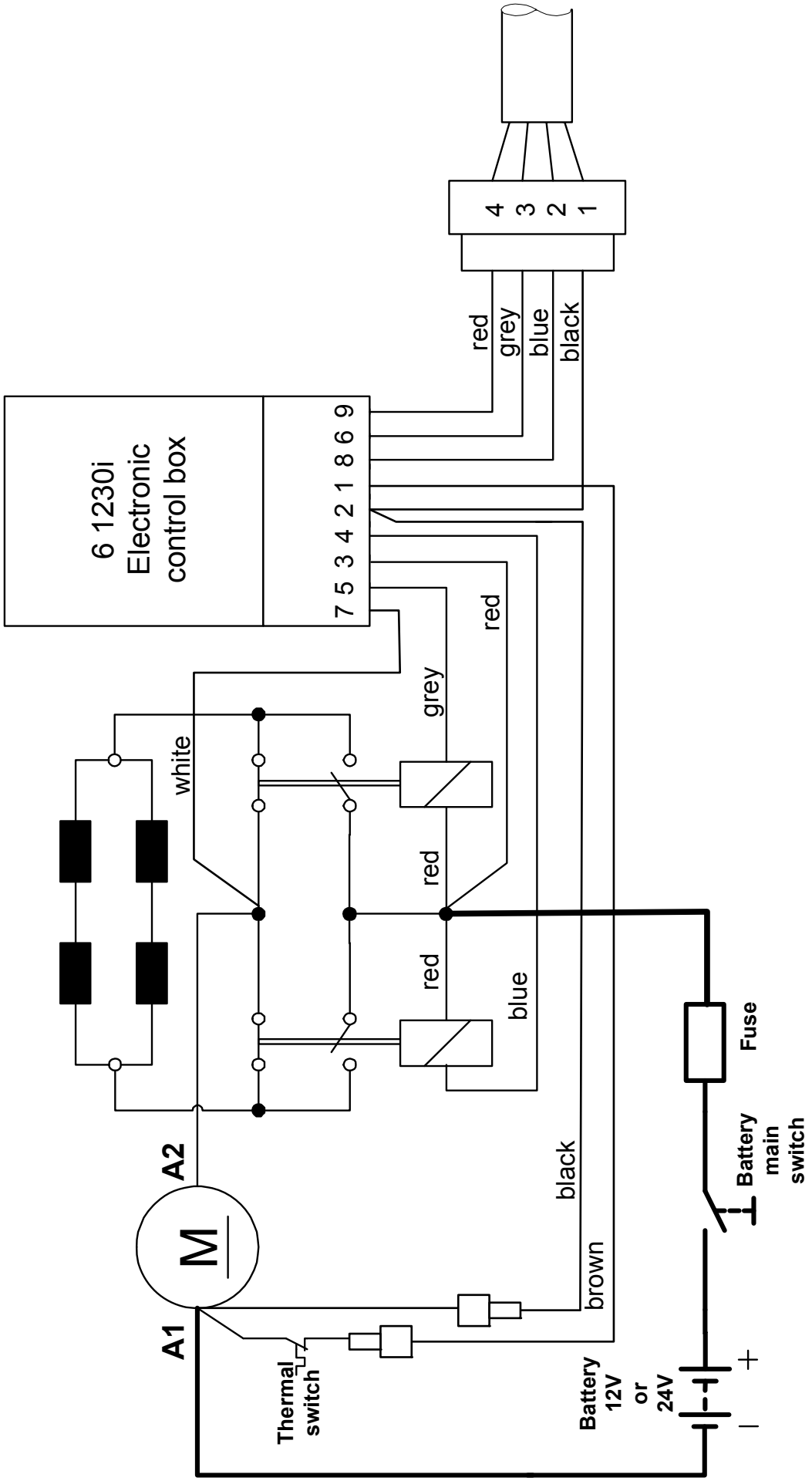
Pin configuration of 4 pole AMP contact:

Pin1: BLACK = Ground

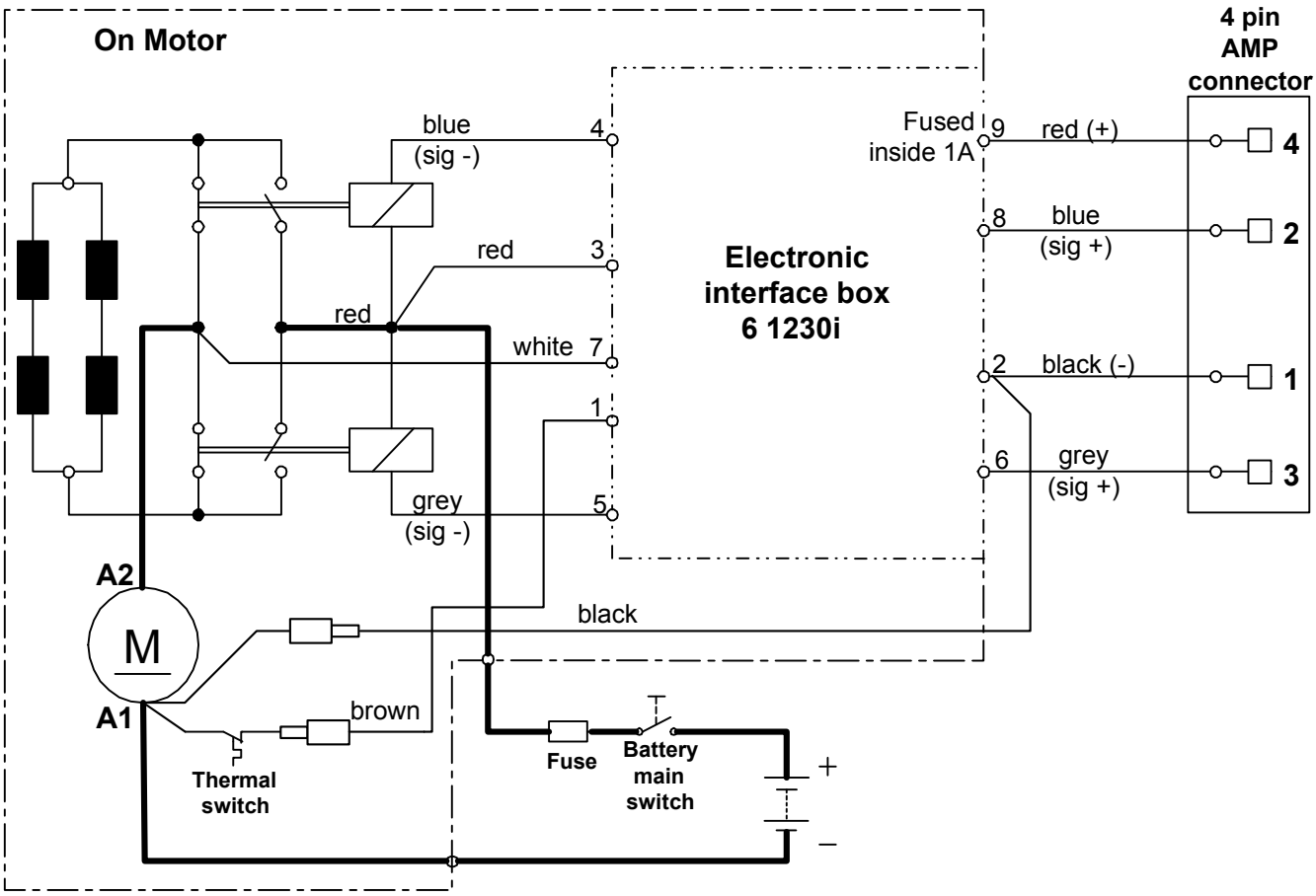
Pin2: BLUE = Engages thruster SB solenoid

Pin3: GREY = Engages thruster Port solenoid

Pin4: RED = Positive voltage for control panel


4 3 2 1
red
grey
blue
black
6 1230i
Electronic
control box
7 5 3 4 2 1 8 6 9
red
grey
white
red
red
blue
Fuse
Battery
main
switch
A2
M
A1
black
brown
Thermal
switch
Battery
12V
or
24V
+
–

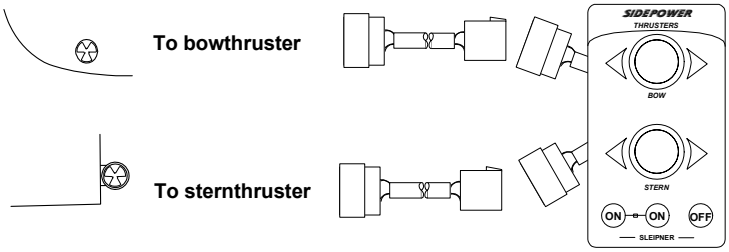
Technical wiring diagram



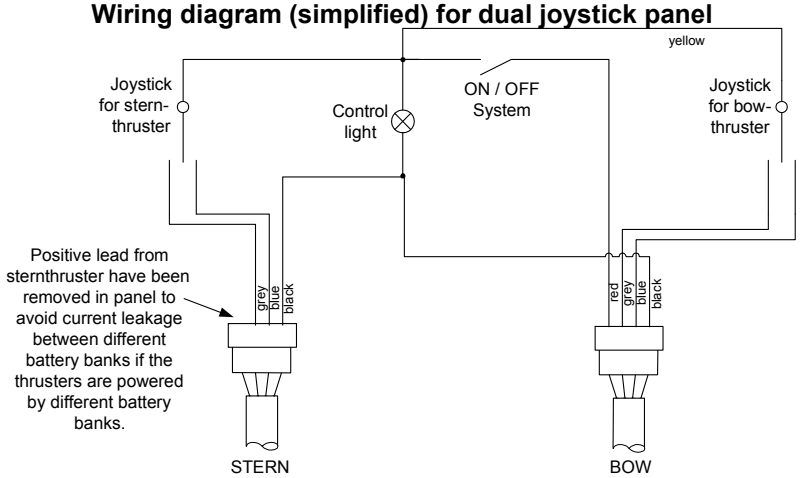
Electrical installation of stern thruster systems

- **We advice to use different battery banks for each thruster to ensure maximum performance when both are used at the same time.**
- **When using the original Sidepower control cables just connect them to the corresponding joystick**
- **There are no plus/positive power connected from the bowthruster**

Visual connection diagram for dual joystick panel



Wiring diagram (simplified) for dual joystick panel

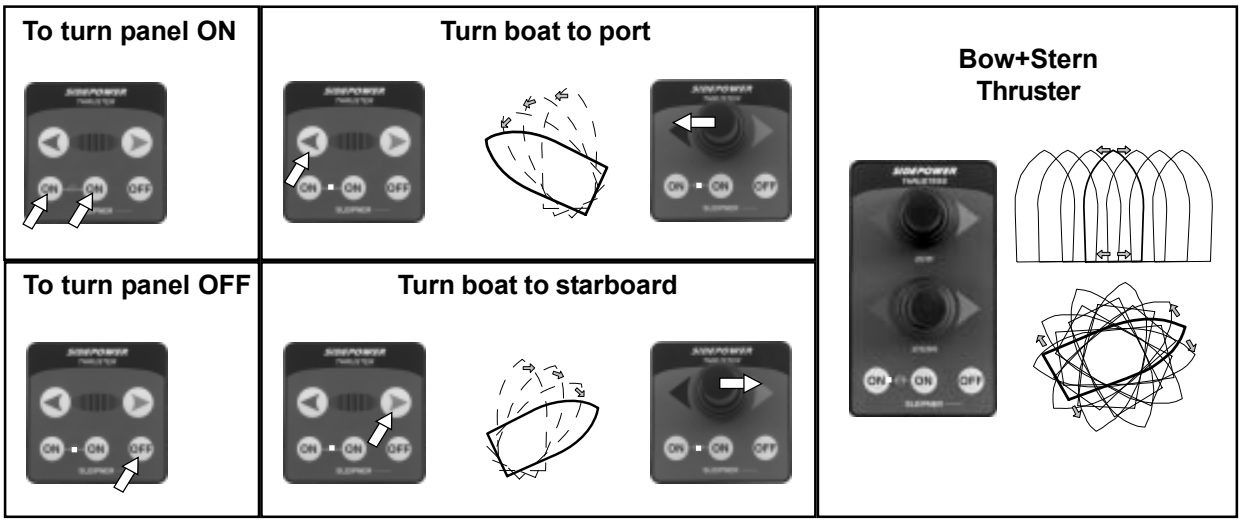


Important user precautions

- Ensure that you know the location and how to operate the main battery switch and that disonnects the thruster from all power sources (batteries) so that the thruster can be turned off in case of a malfunction.
- Always turn the main power switch off before touching any part of the thruster, as an incidental start while touching moving parts can cause serious injuries.
- Always turn the control device off when the thruster is not in use.
- The maximum continous usage time of the electrical thruster is approximately 3 minutes. The electromotor has a built in thermal cut-off switch that will shut off the electromotor if it is overheating and re-engage it when it has cooled down some. This should be considered when planning your manouvering.
- This also means that the thruster will limit its total running time per time period so that you can not count on the thruster to hold you in a current and sidewind for extensive time periods. Depending on the ambient temperatures etc. the thruster will be able to run approximately 10 % of the time.
- Never use a thruster close to somebody in the water, as the thruster will draw objects close by into the tunnel and contact with the rotating propellers will cause serious injuries.
- With the boat on land, only run the thruster for a fraction of a second, as without resistance it will accelerate very fast to a damaging rpm. Also, while the thruster is in air, make sure that the propellers have come to a complete stop before performing a direction change of the thruster, as it might cause damage to the thruster.
- If the thruster stops giving thrust while the electromotor is running, chances are that there is a problem in the drive-system. You must then immediately stop trying to run it, and turn it off, as running the electromotor for more than a few seconds without resistance from the propeller, can cause serious damage to the electromotor.
- When leaving the boat always turn off the main power switch for the thruster.
- We advice to always keep the main engine(s) running while using a thruster. This will keep the batteries in a good charge condition. This will also give better performance to the thruster, as a higher voltage at the thruster results in a higher torque (power) in the electromotor.
- Please note that the performance of a thruster strongly depends on the voltage available at the electromotor. This voltage will decrease by time because aging batteries have a reduction of capacity. By installing new batteries the effect of the thruster should be back at the original level.
- Make sure that only one control is used at the same time, if two panels are operated in opposite directions at the same time the thruster will not run at all. If they are operated in the same direction the thruster will run in this direction.
- If the thruster is not performing or functioning as usual, the cause for this must be found and corrected as soon as possible so to avoid causing any other or further dammage to the equipment. You must also turn off the main battery switch immediately in case the problem is of electric origin.
- To activate the docking control panel, push the two “ON” buttons simultaneously.
- The docking control panel shuts of automatically approx. 25 minutes after it was energized. To use the docking control panel later, push the two “ON” buttons simultaneously.
- The boat switch is an on/off switch device only that controls your thruster(s). The thruster(s) will run at a constant speed regardless of how hard you pull/push the control switch.

Warning:

- **Tampering with the Ignition Protected stern thruster assembly or any attempt to disassemble anything on this thruster assmebly inside the boat can cause an explosion with very serious consequences.**
- **If there is a problem with your Ignition Protected stern thruster, please contact your dealer.**
- **Danger: NEVER Disassemble any part of the Ignition Protected stern thruster assembly**



How to use Sidepower thrusters

How to use a bowthruster

1. Turn main power switch for the bowthruster on. (Always turn off the main power switch when not onboard.)

2. Please take some time to exercise thruster usage in open water to avoid damages to your boat.

3. Turn the controlpanel on by pushing both "ON" buttons on the original Sidepower panel simultaneously. If another type of control is installed, engage the On/Off switch for the bowthruster.

4. Turn the bow in the desired direction by pushing the red button for port movement or the green button for starboard movement. If you have a joystick control, move it in the direction you wish the bow to move. Other controls like footswitches or toggle-switches on the throttle can be used. These are normally logically installed, so by engaging the port control, the bow goes port etc. In case of any doubts, try in open waters first.

5. Depending on the sideways speed of the bow, you must disen-gage the control device shortly before the bow is in the desired direction, as the boat will continue to move after stopping the bowthruster.

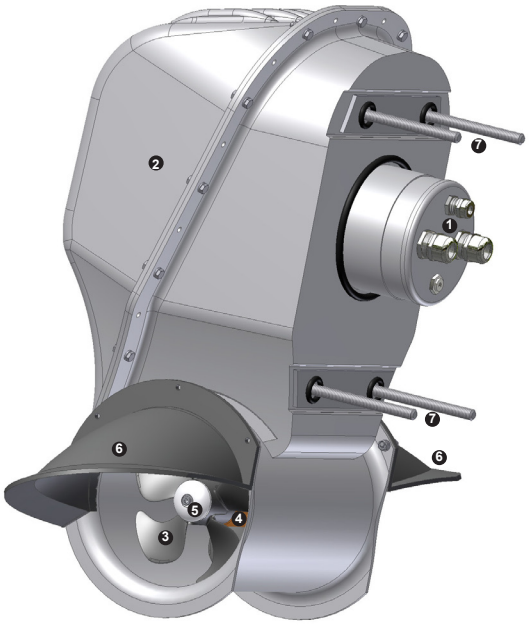
How to use a single stern thruster

Some boats might however have installed a single stern thruster because of space limitation in the bow. In this case the stern thruster is used in the same way as a single bow thruster (see above) for moving the boat's stern.

How to use a bow and stern thruster combined

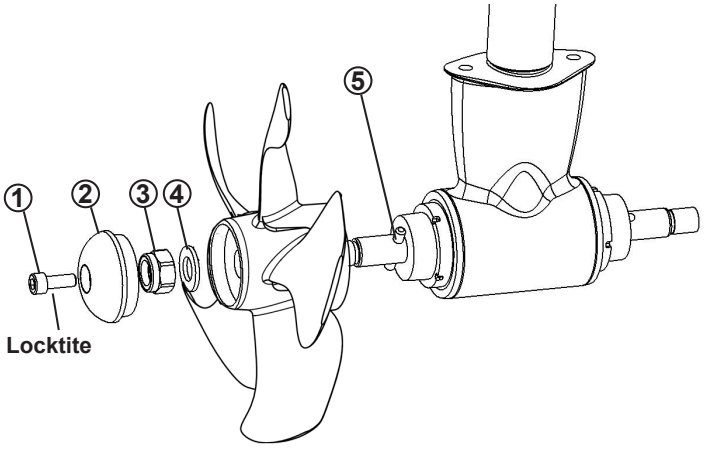
The combination of a bow and stern thruster offers total manouverability to the boat and the opportunity to move the bow and the stern separately from each other. This enables you to move the boat sideways in both directions and to turn the boat around it's own axis staying at the same place.

- Again, if in doubt, try in open water first!



❶ Power & control cables
❷ Ignition protected and waterproof casing
❸ 5-blade skew Q-PROP propeller for ultimate performance.
❹ Prefilled &sealed gearleg.
❺ Changeable zincanode protects gear-house from corrosion in seawater.
❻ Additonal cowls
❼ Bolts securing the assembly to transom

❶ Fastening screw for zincanode
❷ Zincanode
❸ Propeller lock nut
❹ Washer
❺ Drivepin for propeller



Maintenance

» Keep the propeller and gearhouse clean from growth by painting with antifouling before every season.
PS ! The zinc anode, sealing and propeller shafts must abso-lutely not be painted. Be careful that you don't fill paint in the "tracks" in the gearhouse that the propeller hub moves in.

» Change the zinc anode before every season, or when about half the anode is gone. Always use a sealant on the screw holding the zincanode to ensure that it does not fall off. Please observe that in some waterconditions it can be necessary to install an extra zincanode to ensure that it lasts for the whole period between regular service lifts of the boat. Consult your dealer for information on how to do this.

» As a part of the seasonal service of your boat, and before every season, always check that:

- The propeller is securely fastened
- The area where the thruster is installed is clean and dry. If there are signs of water you must try to find the source and eliminate it.
- All electrical connections are clean and fastened firmly.
- Make sure that your batteries are in a good condition so that the thruster gets a good voltage. Old or bad batteries will give a reduced performance from the thruster.

Warning:

- **Tampering with the Ignition Protected stern thruster assembly or any attempt to disassemble anything on this thruster assmebly inside the boat can cause an explosion with very serious consequences. Tampering will also void the thruster assembly waterproofing.**
- **If there is a problem with your Ignition Protected stern thruster, please contact your dealer.**
- **Danger: NEVER Disassemble any part of the Ignition Protected stern thruster assembly**

Before seeking assistance at the help desk of your Sidepower dealer / distributor please perform these tests and make notes of all measurements to ensure that they have as much information as possible to work on.

NB! All check points and solutions must be carried out after consulting the relevant information elsewhere in this manual to understand how the system is intended to work.

If you are unable to understand what to check, you must consult a professional.

Check	*Solution*
» The electromotor runs, but there is no thrust.	
Are the propellers in the tunnel fastened correctly on the prop-shaft (key present)	Re-fasten or replace the propeller and/or key.
» The thruster does not start at all or works only in one direction.	
Check that the voltage of the electromotor are correct for your installation by their labels.	If wrong, contact your dealer or distributor to obtain parts with the correct voltage.
Check the voltage at the thruster between main minus input (A1 on motor) and main plus input point:	The no load voltage should be: 12V system =12,7V / 24V system = 25,4 V. If below 12,3V / 24,6V your batteries are not in a good charge state or worn out and must be recharged or replaced before trying to run the thruster.
Check the voltage at the thruster while you are trying to run it. Keep main engine(s) running to have continous charge to the batteries.	If less than 8,5V at the thruster the voltage is to low for the thruster to operate correctly. In a 24V boat the thruster will operate down to approx. 12V, but the performance will be very bad. Find and correct the reason for this low voltage which will probably be one or more of these points: main battery cable sizes and connections, battery size and condition, fuse and main power switch performance
» The thruster has an unexpected low performance.	
Check voltage at thruster when running	If less than 10,5 V / 21V the thruster will not perform at specified effect.
Check that the propeller, gearhouse and tunnel is free from growth / barnacles etc.	If there are growth in the tunnel, this will disturb / block the waterflow and especially barnacles on the propeller will greatly reduce performance.
» The thruster runs for approximately 0,5 seconds every 4 seconds.	
Solenoid flapping, most probable cause: low voltage.	Re-charge battery(ies), if this is not sufficient, replace battery(ies). Check for bad cable connections, if necessary tighten/re-adjust connections. Check cable size in accordance to manual.

Warranty statement

1. The equipment manufactured by Sleipner Motor AS (The “Warrantor”) is warranted to be free from defects in workmanship and materials under normal use and service.

2. This Warranty is in effect for of two years from the date of purchase by the user. Proof of purchase must be included, to establish that it is inside the warranty period.

3. This Warranty is transferrable and covers the product for the specified time period.

4. In case any part of the equipment proves to be defective, other than those parts excluded in paragraph 5 below, the owner should do the following:

(a) prepare a detailed written statement of the nature and circumstances of the defect, to the best of the Owner's knowledge, including the date of purchase, the place of purchase, the name and address of the installer, and the Purchaser’s name, adress and telephone number;

(b) the Owner should return the defective part or unit along with the statement referenced in the preceding paragraph to the warrantor, Sleipner Motor AS or an authorized Service Centre, postage/shipping prepaid and at the expense of the Purchaser;

(c) if upon the Warrantor’s or Authorized Service Centre’s examination, the defect is determined to result from defective material or workmanship, the equipment will be repaired or replaced at the Warrantor’s option without charge, and returned to the Purchaser at the Warrantor’s expense;

(d) no refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. Prior to refund of the purchase price, Purchaser must submit a statement in writing from a professional boating equipment supplier that the installation instructions of the Installation and Operation Manual have been complied with and that the defect remains;

(e) warranty service shall be performed only by the Warrantor, or an authorized Service Centre, and any attempt to remedy the defect by anyone else shall render this warranty void.

5. There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically designed as waterproof.

6. No other express warranty is hereby given and there are no warranties which extend beyond those described in section 4 above. This Warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, and any other obligations on the part of the Warrantor or its employees and representatives.

7. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any person or persons, or damage to property, loss of income or profit, or any other consequential or resulting damage or cost which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure or malfunction of the equipment, or part thereof.

8. The Warrantor assumes no liability for incidental or consequential damages of any kind including damages arising from collision with other vessels or objects.

9. This warranty gives you specific legal rights, and you may also have other rights which vary from country to country.

Checklist

- ☐ All electrical wiring, cable sizes and battery capacity is according to the thruster installation manual.
- ☐ All bolts are securely tightened and sealant are applied as instructed.
- ☐ Anti-fouling have been applied to the gearhouse and propeller but NOT on the zincanode or the gearhouse lid where the propeller is fastened.
- ☐ Correct drive direction as per controlpanel.
- ☐ All electrical connections are clean, dry and tight, and the correct cable, fuse and main switch sizes have been used.
- ☐ The bolts holding the gearhouse and motorbracket together are tightened correctly.

Very important for IP protection:

- ☐ The main power cables have securely been connected as described.
- ☐ The control lead ends out of the explosive area and has been properly fitted and secured against damage.

The thruster has been installed as per the instructions in this manual and all points in checklist above have been controlled.

Signed: ..... Date: .....

Extra pre-delivery tests by installer / yard who does not use other quality control systems !

Thruster type: ..... Voltage: .....

Serial number: .....

Date of delivery: .....

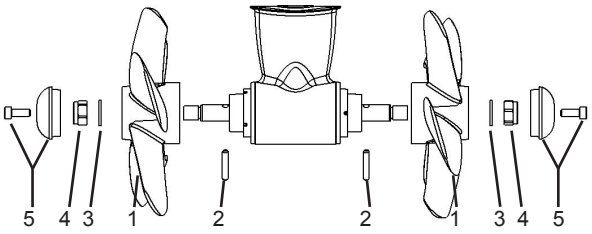
Correct drive direction as per controlpanel: .....

Voltage at thruster when running: .....

Battery cable size used: .....

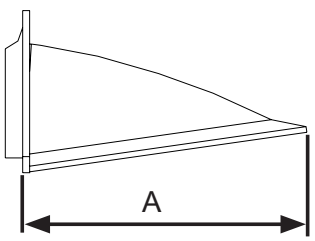
Other comments by installer:

SPARE PARTS



Ref:		Part #
5	Zink anode	7 1190
4	Locknut	4 1260
3	Propeller washer	7 1181
2	Propeller drivepin	6 1241
1	Propeller	7 1261

OPTIONAL PARTS



Part#	Description
90080	PVC Cowls, long model - A=242mm, kit of two

Service Centres

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Trimer SA
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Fax: +54 11 4580 0440
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